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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/468,489	12/20/1999	HONGYONG ZHANG	1612.63479	3703

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EXAMINER	
QUACH, TUAN N	
ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/468,489	Applicant(s) ZHANG, HONGYONG	
	Examiner Tuan Quach	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 September 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) *7-21* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konuma et al. taken with Ohtani et al. and Yudasaka et al.

Konuma et al. (Konuma) also shows the gate pattern offset from the edge of the gate insulating patters 310/311/312/313, thereby creating offset regions thereunder, forming lightly doped regions and heavily doped regions therein, e.g., regions 317-319, and regions 314-316, respectively, the use of laser beam annealing is also shown. See column 8 line 31 to column 9 line 5.

Ohtani also shows the formation of offset gate e.g., as shown in Fig. 13C with respect to gate oxide 65-77 on semiconductor regions, implant for forming LDD region 80, 84 and source drain 78/79, 82, 83. See Figs. 13A-1D, column 18 line 10-50.

Konuma lacks anticipation primarily in that it does not recite and the hydrogen ions.

It would have been obvious to one skilled in the art in practicing the Konuma process to have included the hydogen in the implant wherein the implanted ions would permit the formation of low concentration which can be activated at a low temperature thereby permitting such LDD TFT structures on glass substrate and permitting the use of low electrical resistance as delineated in Yudasaka et al., column 3 lines 1-16,

column 5 lines 9-25 wherein such inclusion of hydrogen is taught for the lightly doped regions and for the source drain regions, column 18 line 50 to column 19 line 18, column 24 line 29 to column 25 line 12, column 27 line 50 to column 28 line 7 column 20 lines 7-39. Note that the hydrogen is not required to be implanted to the channel region which is masked by the gate thereon and into the implanted regions which correspond to the source/drain and low concentration regions. It would have been within the purview of one skilled in the art to have selected the conventional implant apparatus as in claim 2, the desired energy as in claim 3 depending on the projected range desired. The use of hydride as ion source is well known in the art, e.g., Yudasaka et al., column 29 line 18 et seq., and as such would have been obvious. Regarding the gate insulating layer being less than 50 nm, such selection would have been conventional and obvious and would have been within the purview of one skilled in the art to have employed such gate oxide layer of 50 nm or less given the teachings of Ohtani et al., column 5 lines 35-37, column 14 lines 54-55.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konuda taken with Ohtani et al. and Yudasaka as applied to claims 1-4 above, and further in view of Yamazaki et al.

Regarding the use of laser annealing, Konuda further teaches the use of laser annealing, e.g., column 5 lines 18-22, column 6 lines 5-12. Yamazaki et al also teaches the use of laser annealing for recrystallization, see, e.g., column 5 lines 60-64 and for activation, column 6 lines 24-36.

It would have been obvious to one skilled in the art in practicing the above process to have employed laser annealing to recrystallize and to activate dopants since such corresponds to conventional techniques for such purposes as shown in Konuda and Yamazaki et al. The damage would be recovered during such activation, or alternatively, it would have been obvious to one skilled in the art to have obtained recovery of the damage during such annealing.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Konuda taken with Ohtani and Yamazaki et al.

Konuda, Ohtani and Yamazaki are applied as above. It would have been obvious to one skilled in the art to have employed the laser annealing for the reasons delineated above with regard in claims 5-6.

Applicant's arguments with respect to claims 1-6 and 22 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Quach whose telephone number is 703-308-1096. The examiner can normally be reached on M - F from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Wael Fahmy can be reached on (703) 308-4918. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9318 (Before Final) and (703) 872-9319 (After Final).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Tuan Quach
Primary Examiner